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NAS Confidential Assessment Gloomy on Soviet R&D Ties

An unvarnished assessment of prospects for Soviet-American scientific and technical cooperation is contained in a series of briefing papers prepared by the officers and staff of the National Academy of Sciences (NAS) and restricted in distribution to NAS members at last month's annual meeting of the Academy. Following are excerpts from a copy obtained by SGR.

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First, the series of summit meetings begun in Geneva in 1985 will keep the pressure on both sides to find areas of common interests, not only in arms control but also in other fields such as scientific cooperation. Second, technology transfer will become an even more contentious issue within the United States as more cases of Soviet acquisition of technology through nefarious means comes to light and as DOD funding penetrates more deeply into the US scientific establishment. The inevitable result will be even more stringent US limitations on scientific exchanges. Finally, US government financial support for nongovernmental scientific exchanges will not increase and may decrease in the wake of overall reductions in government budgets, as the Administration continues its emphasis on cultural exchanges and private funding of exchange activities.

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The implications of these developments for the inter-academy [NAS and Soviet Academy of Sciences, as distinct from the government-to-government] program are manifold. Of most direct relevance are the increasing difficulties in obtaining visa clearances for exchanges in areas of basic research that might have long-term military implications and the decline in government funding for Academy activities. Also of significance is the withdrawal of intergovernmental scientific exchange programs from areas of applied research into areas of basic research that overlap with areas traditionally pursued by NAS (e.g., physics, chemistry, geology). Both of these developments adversely affect the funding posture of NSF, which provides core support for NAS exchange programs.

Thus, the principal problems facing NAS are in Washington, not in Moscow. While the Soviet Academy has many options for interacting with US scientific institutions, the NAS program retains a special status, and in general, gaining Soviet agreement on programs of interest to NAS should not be difficult. However, developing a program that is scientifically attractive, consistent with

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National Institutes of Health Hit by Wave of Political Woes

From the sublime to the savage—that's the transition that has occurred in mere months in the usually tranquil politics of the National Institutes of Health.

Involved are several embarrassing though unconnected matters that have suddenly coalesced and given political fright to the NIH managers and their Departmental superiors. The basic elements are allegations of costly procurement irregularities in administration and tolerance of fraud in research. The combination has produced turmoil on the campus of the world's greatest biomedical research institution.

On April 29, at a staff assembly announced that day, NIH Director James B. Wyngaarden reported, with evi-

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In Brief

The self-perpetuating National Academy of Sciences remains one of the most unyielding organizations on admission of women. They now total 49 in a membership of 1540. Last month's annual election brought in 61 new members, three of them women. Fifteen Foreign Associates were elected—all male. In a letter to members, NAS Foreign Secretary William E. Gordon noted an absence of nominees from the USSR, China, and the developing nations. Inviting recommendations "to broaden the pool of Foreign Associates," he added, "In particular, you should identify some women scientists for consideration in the process."

Reflecting a position taken by White House Science Adviser William R. Graham, the Council of the Organization for Economic Cooperation and Development (OECD) has included a strong provision for "universal protection of intellectual and industrial property rights" in a General Framework of Principles for International Cooperation in Science and Technology. The framework has no legal or administrative standing, but it does radiate influence on dealings among the 24 OECD nations.

Washington science-policy circles are inevitably speculating about science advisers in the Dukakis and Bush camps. But the evidence suggests that science issues and scientists don't rate on the campaign trail. Bush has got some advice from Edward E. David Jr., whom he knew as White House Science Adviser in the Nixon Administration. Lewis Branscomb, former IBM Chief Scientist, now at Harvard, contributed to Dukakis' response to a science-issues questionnaire from the Federation of American Scientists. But so far, there are no leading, or even visible, contenders for the top science post in the next Administration.

. . . East European Science Seen Falling Further Behind

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US governmental short-term policies, and appealing to funding institutions will not be easy.

Against this background, the recommended approach for the interacademy program for the immediate future includes . . . Continuation of the exchange of individual scientists and academicians, recognizing that the rate of US government denials of Soviet visa applications will probably increase significantly . . . .

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Within the Soviet Academy, a new generation of scientists, more attuned to the international dimensions of science and technology, is rapidly replacing the elderly academicians who in many cases have lost touch with both technological and political realities. These younger leaders are shaping the *glasnost* of the Gorbachev era . . . . Just five years ago, we could not have imagined exchanging ideas with Soviet leaders on the major reform of their economic system, yet in the past several months we have talked frankly and at length with the economic brain trust of Gorbachev's regime about many problems at the very core of the Socialist system. Similarly, we have obtained unparalleled insights concerning the strengths and weaknesses of the Soviet approach to science and the conflicts inherent in attempting to revitalize the Soviet research community.

. . . we expect that (a) Soviet scientists will travel abroad more frequently and more easily to meet colleagues and attend scientific meetings, (b) Soviet scientists will receive US and other scientists at Soviet institutions more readily, and (c) the communication between scientists of the two countries will flow more rapidly.

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[In the Eastern European nations] economic limitations obviously are reflected in the budgets of scientific institutions throughout the region and in the access of these institutions to the foreign currency needed to maintain modern laboratories. There is no doubt that with each passing year in almost every field of research, laboratories are falling behind the West in terms of facilities, equipment, supplies, and access to journals. All the academies attach very high priority to having many scientists spend time in the West—to gain experience in modern facilities and to establish contacts that will provide continuing access to Western accomplishments and resources. Mastery of the English language is rapidly becoming a requirement for scientists in many Eastern European institutions. Finally, East European scientists are rapidly uncovering all possible sources of funding throughout the world that would enable them to spend time in the West. Of course, there are far more East European scientists traveling East [to the Soviet Union] than West, but such travel is usually considered a consolation prize for those who cannot go West.

The policies of the US government in response to these developments affect cooperative programs with the science academies of the region in several important ways. First, the efforts to integrate science and technology activities within the Socialist countries have raised concerns within the [US] government that the USSR will be in a better position to draw on East European technologies for strengthening its military establishment. Therefore, the government is becoming more stringent in the limitations it places on approving visas for specific research activities that might in the long run have military applications.

Second, funding agencies do not give high priority to cooperation with East European institutions despite continuing statements by the State Department concerning the importance of the region. The NSF budget for bilateral programs, in particular, has not kept up with the number of commitments made by NSF in the region, and USIA [US Information Agency] is not a significant funder of scientific exchanges. This limited interest of government funding agencies is paralleled by a similar lack of interest within the private foundations. Also, the limited capability of the US government, and indeed the nation, to keep abreast of science and technology developments in the region, let alone to assess their significance, contributes to a widespread misconception that Eastern Europe has little to offer in the area of scientific exchanges . . . .

And a View of US-Japan Ties

The briefing papers for Academy members also addressed US-Japanese scientific relations. Following are excerpts.

[Protectionist sentiment in the US] has damaged the general "atmospherics" of US-Japanese relations, thereby reducing the good will necessary to make progress in rectifying the imbalances—or asymmetries—that exist in the [scientific and technical] relationship. But Congress has also seized on the imbalance between the number of Japanese researchers working in the US R&D system (approximately 7000) versus the number of American scientists and engineers working in Japan (almost certainly fewer than 500) as further proof of the fact that Japan is taking a virtually free ride on the US investment in basic science, in the process producing technological applications that exacerbate the bilateral trade deficit. What is not revealed . . . in a simple comparison of numbers is how many on the Japanese side subsequently elect to stay in the United States . . . .

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. . . Firing Ordered to Avert Risk of Political Scandal

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dent anguish, that under protest, he had carried out orders to banish from the NIH campus a popular and respected senior scientist-turned-administrator, Edwin D. Becker. With the meeting confined to 4:30 to 5:00 on a Friday afternoon, Wyngaarden hurried over a complex series of happenings. He said that Becker, who had left a successful research career at NIH in 1980 to reform the institution's notoriously coagulated supply system, had performed outstandingly as Director of the NIH Office of Research Services. Becker is not accused of personal profiting or misdeeds, but rather, as Wyngaarden put it, "of providing service at the cost of economy."

Nonetheless, Wyngaarden told the assembly, Becker had to be sacrificed to counter a potential scandal that could be dangerous to NIH's fortunes in Congress. Richard P. Kusserow, Inspector General of NIH's parent agency, the Department of Health and Human Services (HHS), had received a draft report charging that Becker had transformed the NIH supply system by shortcutting federal procurement regulations. As a result, $26 million "in precious research funds [are] being lost each year," Kusserow wrote to HHS Secretary Otis R. Bowen in a letter dated April 15. Wyngaarden said he had protested that the figure cited by Kusserow was far in excess of the losses, if any, but the Department nonetheless viewed the matter as politically dangerous.

Advising "aggressive action" in advance of a scheduled May 31 release of a report based on a major audit of NIH procurement practices, Kusserow warned Bowen that: "At a time of high public and Congressional concern over scientific misconduct, this Department's actions should support a commitment to the integrity and prudence in biomedical research."

Kusserow's reference to "scientific misconduct" was clearly tied to recent, highly publicized Congressional hearings—unrelated to the procurement issue—at which a confused, uninformed performance was rendered by NIH officials responsible for handling scientific fraud cases (SGR April 15, May 1). The most flamboyant of these hearings, the first of a series in preparation, was chaired by the irritable and powerful John D.

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US-Japan

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The negative view of Japan as a "free rider" . . . was aggravated still further by revelations . . . regarding the sale by the Toshiba Heavy Machinery Co., together with the state-owned Konigsberg Corp. of Norway, of . . . machine tools used by the Soviets to produce quieter propeller blades for their submarines . . . .

Juxtaposed against the negative influences . . . . Monbusho (the Japanese equivalent of our Department of Education) . . . has recently announced the creation of up to 50 fellowships per year in scientific fields earmarked specifically for foreigners. Similarly, Tokyo University . . . has created three new "endowed chairs" in software, microelectronics, and computer science to be occupied by mid-level academic researchers from Harvard, MIT, and Cambridge University . . . .

But perhaps the most intriguing but poorly understood initiative being pursued by the Japanese government is the Human Frontier Science Program . . . . which is currently anticipated to involve a $1 billion Japanese investment and a very substantial foreign scientific input, as an excellent and highly altruistic way for [Japan] to "give back" to the world—particularly the developing world—from the fruits of its technological prowess. But others are less sanguine about Japanese motivations, suspecting that the program may represent less an altruistic intent and more an effort to buy a basic scientific capability in the life sciences that may lead in relatively short order to commercializable biotechnology applications.

Despite these uncertainties regarding Japanese motivations, there seems little doubt that the leaders of the [Japanese] scientific and technical communities have recognized that, if Japan is to remain competitive in the 21st century, it must develop an independent capability in basic science. This will be expensive, given the current underdevelopment of Japanese research universities, and it will take time, but it should not be doubted that it will happen eventually . . . .

If trade frictions continued unabated, and if the Japanese fail to reduce their "free ride" on the basic science infrastructure of the United States, there is a strong possibility that both countries—but particularly the United States—will retreat into a form of scientific and technological protectionism, with the Japanese increasingly excluded from participation in the US S&T system . . . .

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. . . "Blood in the Water and the Sharks are Circling"

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Dingell (D-Mich.), whose Energy and Commerce Committee writes the basic legislation for NIH, much of it due for renewal this year.

Continuing his report to the assembly at NIH, Wyngaarden said he was ordered not only to remove Becker from the procurement post but also to disbar him from resuming his research career at NIH, which had been in magnetic resonance imaging. In any case, as a member of the Senior Executive Service—the elite corps of federal employes—Becker is under the direct authority of the Secretary of HHS. But at Wyngaarden's request, Becker's fate was discussed at an emotional meeting last month between Wyngaarden and three senior HHS officials: Under Secretary Don M. Newman, No. 2 in the Department; S. Anthony McCann, Assistant Secretary for Management and Budget, and Ralph R. Reed, Deputy Assistant Secretary for Health.

Wyngaarden told the assembly at NIH that he protested Becker's exclusion from research at NIH as unwarranted and "unconscionable." But he was told that NIH was surrounded by politically dangerous controversies—animal rights, research employing fetal tissue, scientific fraud, and a recent conflict with the Department over performance ratings for senior staff. The HHS trio insisted, he said, that a procurement scandal could not be tolerated. Also in the cauldron, though not mentioned, are proposals to "privatize" NIH to free it from cumbersome federal rules, including those that got it into the procurement morass (SGR March 15).

In particular, Wyngaarden said, the recent hearings on scientific fraud had damaged NIH's image. Referring to Becker's firing and banishment, Wyngaarden said, "With deep sadness, we did what we were ordered to do."

The HHS representatives warned him, Wyngaarden continued, " 'that there's blood in the water and the sharks are circling.' " They cautioned him, he added, that NIH had enjoyed beneficial Congressional relations for so many years that it was out of touch with the dangers that stalked Capitol Hill. The draft report on NIH procurement practices was already circulating in Congress, he said. And the Senate Appropriations Committee had signaled its concern by cutting $5 million from an NIH supplemental request "as a warning shot across the bow." Wyngaarden told the assembly that he felt convinced that the HHS representatives "genuinely believed that their actions were for the protection of this great institution."

With time running out on the scheduled half-hour meeting in the NIH auditorium, Wyngaarden sat down and recognition was given to a prominent member of the Washington science establishment, Maxine F. Singer, former Chief of the National Cancer Institute's Laboratory of Biochemistry, who recently became President of the Carnegie Institution of Washington. Singer, who continues research part-time at NIH, said that it was traditional for the scientific staff and the NIH Director to stand together. Then, turning to Wyngaarden, she said, "I express my gratitude to you for continuing that tradition." Her remarks set off applause that quickly turned into a standing ovation by most of the audience.

Wyngaarden responded: "Thanks. All of this is very reassuring to Ted [Becker]." Another speaker thanked Wyngaarden for supporting Becker, and then urged the audience to support Wyngaarden. This brought a quick round of applause. The meeting then ended, but it is far from certain that the dragons on Capitol Hill will be assuaged by Becker's sacrifice.

The procurement regulations that he's accused of violating are indeed a formidable impediment to keeping a laboratory running. Researchers at other government labs in the Washington, DC, area say that simple supply orders often take months to arrive. NIH researchers, on the other hand, revered Becker and his system for swift deliveries of almost any order. "It was a disaster before he got here," a senior researcher at NIH told SGR, adding that pre-Becker, the NIH payment system for equipment and supplies was so incompetent that some firms refused to sell to NIH.

Becker obviously fixed all that, but along the way, there were many warnings of deficiencies from the Inspector General and other surveillance agencies in HHS. In 1984, for example, a report from the HHS Office of Procurement, Assistance and Logistics cited "major deficiencies" in NIH small-purchase operations—with a notation that some of the unattended problems had been cited as long ago as 1976. In May 1986, the same office reported that Becker's operation "often failed" to get competitive bids on small purchases and give small firms mandated shares of its orders or explain why it didn't. Inspections also revealed that procurement authority at NIH was dispersed far beyond authorized ranks and that NIH was ignoring the savings to be had from combining orders. Becker apparently was so confident that remedies had taken effect that he requested an audit of his operations. It was that audit, conducted by the Logistics Management Institute, a Pentagon agency that serves other parts of the government, that set off alarms at the office of the HHS Inspector General.

By many accounts, Becker is guilty of a policy of damn the rules and full scientific speed ahead. Under the painful circumstances of the moment, he will not

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Congressional Fraud Probers Seek Data at MIT, Tufts

Congressional investigators visited MIT and Tufts University last week to seek information for a follow-up to the hearing held April 12 on "Scientific Fraud and Misconduct in the National Institutes of Health Biomedical Grant Program" (SGR April 15, May 1). But they found that several of the key figures they hoped to talk to have hired big-league lawyers from Boston and Washington and would not at this point cooperate with the investigation.

Meanwhile, under Congressional fire for neglecting the fraud issue, NIH has quietly added two professionals to its fraud office, which heretofore has been staffed by just one, and a third addition is in the personnel mill. Nonetheless, the persistent Congressional interest and the course that events are taking signal more Congressional trouble for NIH on the festering issue of fraud and misconduct in science.

The MIT-Tufts expedition included Walter Stewart, the NIH staffer who, along with his NIH colleague Ned Feder, has been on a self-assigned crusade about the accuracy of scientific literature. At the request of Rep. John D. Dingell (D-Mich.), Chairman of the House Committee on Energy and Commerce, Stewart and Feder are on call to assist the investigation, which is being conducted by the Subcommittee on Oversight and Investigations, of which Dingell is also Chairman.

The ongoing inquiry is in connection with allegations that were raised at the April 12 hearing concerning a paper published in *Cell* of April 26, 1986, by a research group that included Nobelist David Baltimore, Director of the Whitehead Institute for Biomedical Research, at MIT. Charges concerning alleged errors in the paper were raised by Margot O'Toole, a former postdoctoral fellow in an MIT laboratory headed by a colleague of Baltimore, Thereza Imanishi-Kari, now at Tufts.

Committee sources tell SGR that Imanishi-Kari had originally agreed to meet with them, but that she later said that on advice of newly obtained counsel, she would have to cancel the meeting. The Committee was also advised that Baltimore had engaged counsel, and that MIT and Tufts required additional time to assemble documents requested by the Committee. The turn to lawyers is quite prudent, given the standard ferocity of Dingell's inquiries and the aroma of guilty until proven otherwise that permeated the April hearing.

In addition to investigating circumstances surrounding the *Cell* paper, the Committee investigators are following leads concerning other matters that were brought to their attention following news reports of last month's hearing. As a key Committee staff member told SGR, "A lot of people with fraud complaints have been

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NIH

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receive the medal he so obviously deserves. The last word is that NIH was trying to arrange an exchange appointment for him at a local university. But his ouster raises a serious issue: As Director of the Office of Research Services, Becker was a mid-rank underling in the NIH hierarchy. When things were going well, he was lauded. When they went badly, he was jettisoned, with reluctance and misgivings, to be sure—nonetheless, off he was sent with only a minor acknowledgement of complicity in his style of operation.

The acknowledgement came in a letter of protest to the HHS Secretary from 28 NIH scientists who are members of the National Academy of Sciences. Urging Becker's reinstatement as an NIH researcher, the letter states: "The charge of waste of government funds in the procurement process is also a charge against intramural [i.e., NIH staff] scientists. It should be recognized that scientists make the primary procurement decisions . . . . We make every effort to buy as inexpensively as possible, consistent with the requirements of our experiments."

Is it possible that the Congress that has fawned on NIH could turn hostile? That's not likely. In recent years, even in the most stringent budget season, strong bipartisan support has enthusiastically lined up to shower largess on NIH. It's the one government agency whose mission draws no dissent. It has inflamed animal-rights advocates and a few other special interest groups. But until recently, NIH's main political task has been to fight off lobbyists who want NIH to grow faster and do more. An assessment of the political standing of NIH would have to conclude that few if any civilian agencies share its good fortune.

But the Departmental friends of NIH may not be off the mark in worrying about an erosion of Congressional confidence. Procurement violations are red meat for the publicity carnivores of Capitol Hill. And so is the subject of scientific fraud, which intrigues laymen, though it bores the scientific establishment. NIH and its establishment allies have mishandled the fraud issue with wondrous ineptitude.

At this point, there's some tarnish on NIH's luster. It's not dreadfully serious and it is removable. But NIH and its friends in academe and Congress will have to work at it and not assume that good fortune belongs to NIH.—DSG

Next Issue: Wyngaarden Q&A On the Troubles at NIH

"Science" Editor Assails Handling of Fraud Reports

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coming out of the closet."

The fervor and resources that Dingell's Committee is lavishing on this issue are not unrelated to its perception of stonewalling and arrogance by the scientific establishment. At last month's hearing, William F. Raub, the Deputy Director of NIH, estimated the number of fraud cases as "vanishingly small"—in effect telling Dingell and his colleagues that they were wasting time on a phantom problem. The message may be correct—no one knows—but it is insulting to Congressional sensibilities. Beyond that, however, having heard similar assurances in recent years about probity in the stock market and several other regions of moral failure, Dingell does not have a rosy view of human rectitude. And since institutions under siege routinely insist that they are best suited to police their wrongdoers, if any (as they qualify it), the NIH apologia was an old story for the Congressman.

Directly following Dingell's hearing, the Panglossian view of the scientific-misconduct issue was presented in an editorial in the April 29 *Science*, "Science, Journalism, and Whistle-Blowing," by editor Daniel E. Koshland, Jr.

In this instance, as in others, Koshland's earnest efforts at thoughtfulness are marred by a slovenly disregard for factuality that surpasses even the generous boundaries of editorial license. On January 9, 1987, for example, he editorialized that "we must recognize that 99.9999 percent of [published scientific] reports are true." Asked by SGR for the source of that precise assurance, Koshland credited it to "hyperbole."

In his latest discussion of the fraud issue, he writes: "We see, for example, the charge that there is widespread fraud, followed by a text defining fraud as a broad concept including 'misconduct.' Misconduct is then interpreted to include such items as poor proofreading or incomplete references."

Asked by SGR for the location of the referred-to "text," Koshland identified it as a paper by Stewart and Feder, "The Integrity of the Scientific Literature," published in *Nature* on January 15, 1987. But nowhere does that paper allege "widespread fraud." In fact, it states that "Outright fraud . . . is presumably rare." Furthermore, the word "misconduct" does not appear in the Stewart-Feder paper, though the word "lapses" does, in reference to what they consider to be departures from accepted scientific practice. And there's no instance in the paper of "poor proofreading" represented as "misconduct." "Incomplete references" are noted but only in regard to uncited use of previously published material.

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OMB Rejects Proposed Fraud Regulations as Too Stringent

While Congressmen berate NIH for what they see as laxness on scientific fraud, the Office of Management and Budget (OMB) last month rejected NIH's proposed regulations on the subject as too stringent.

OMB, which has final authority over regulations proposed by federal agencies, said the proposal "raises serious risks of undue pressures for scientific conformity and questions about the judgmental nature of a finding of misconduct."

The OMB decision leaves NIH with general regulations on scientific misconduct, long spelled out in the NIH *Guide for Grants and Contracts*. But, as a result of OMB's action, the existing regulations are not backed up by rules detailed in a proposed regulation titled "Recordkeeping and Reporting Possible Misconduct in Science." The rejected proposal specifies the investigatory procedures and reporting requirements that institutions are to follow in responding to charges of fraud and misconduct involving NIH funds.

The rules proposed by NIH have been the subject of three years of discussion between Bethesda and the Department of Health and Human Services. A mutually acceptable version was finally negotiated last year, and was sent to OMB for what was expected to be an easy and final approval. But, in a letter dated April 29, James B. MacRae Jr., Acting Administrator of the OMB Office of Information and Regulatory Affairs, advised HHS that the regulations were unacceptable.

It may be assumed that OMB drew advice on this issue from the foundering White House Office of Science and Technology Policy, which has encountered numerous frustrations in its efforts to assert authority over biomedical and biotechnology issues.

OMB crowned its rejection of the regulations with a suggestion for what it coyly termed "a superior approach" that, in reality, is a prescription for leaving NIH at the mercy of Congress. It advised HHS to "seek comments . . . from the public, members of Congress, researchers, scientific societies and associations, independent scientific advisory bodies, such as the Institute of Medicine, the General Accounting Office, Congressional Research Service, and others."

. . . Koshland Urges Caution in Reporting Fraud Cases

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When invited by SGR to account for these discrepancies, Koshland replied that the Stewart and Feder "line is that misconduct and fraud are extensive. Then it gets forgotten—which is extensive?"

The section of the editorial offering Koshland's prescriptions for appropriate journalistic practices is a primer for journalistic passivity and obedience to authority—the pre-*glasnost* spirit applied to the American scene. Instead of calling for energetic reporting to explore the unknown dimensions of the fraud problem, Koshland states that when fraud is alleged, "The original story may have to state the facts of an accusation before all the background is obtained, but in most cases, the story can be delayed, and in all cases pertinent doubts should be expressed." Here is a call for journalistic timidity, rather than a charge to investigate forcefully to serve the readers.

The editorial states, "If the accusation [of fraud] is correct the miscreant should be punished and the whistle-blower commended." But *Science* is yet to commend any whistle-blower, including those who were vindicated by federal investigations following coverups by research institutions.

It is dismaying to realize that Congress is looking on and regards these views as representing the spirit of science. Beyond that, the Board of the American Association for the Advancement of Science, publisher of *Science*, should ponder whether this antediluvian mentality—one so at home with the manipulations of public relations—merits authority over a journalistic enterprise.—DSG

In Print

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an OTA series on biotechnology, this report focuses mainly on regulatory and safety issues of small-scale field tests over the next five years, boldly concluding that "there are reasons to continue to be cautious but there is no cause for alarm." To which it adds: "Some questions can be answered only with practical experience."

The previous publications in the series: ***Ownership of Human Tissues and Cells*** (176 pp., $7.50, GPO Stock No. 052-003-01060-7), and

Public Perceptions of Biotechnology (136 pp., $19.95, plus $3.00 for handling, NTIS Stock No. PB 87207-544/AS). In preparation in the series are reports on US investment in biotechnology and patenting issues.

The OTA reports with GPO Stock Numbers are available from: US Government Printing Office, Washington, DC 20402; tel. 202/783-3238. ***Public Perceptions . . .*** is available from the National Technical Information Service, 5285 Port Royal Rd., Springfield, Va. 22161; tel. 703/487-4650.

OECD Starts New R&D Series

The Organization for Economic Cooperation and Development (OECD) has announced a new periodical covering R&D data from its 24 member nations, ***Main Science and Technology Indicators—1981-87*** (46 pp.), a twice-a-year supplement to its biennial series ***OECD Science and Technology Indicators.*** (Free sample on request; subscriptions: $33.00, surface mail; $35.55 by air.)

OECD publications are available from various sales centers in many major cities around the world. In the US: OECD Publications and Information Center, 2001 L St. NW, Suite 700, Washington, DC 20036; tel. 202/785-6323.

Job Changes & Appointments

Cornelius J. Pings, Provost of the University of Southern California, has been named Chairman of the Committee on Science, Engineering and Public Policy at the National Academy of Sciences, succeeding ***Gilbert S. Omenn,*** Dean of the School of Public Health and Community Medicine, University of Washington.

William A. Wulf, AT&T Professor of Engineering and Applied Science at the University of Virginia, has been appointed Assistant Director for Computer and Information Science and Engineering at the National Science Foundation. He succeeds the founding head of the Directorate, ***C. Gordon Bell,*** who left last year to return to industry.

C. Bruce Tarter has been named Associate Director for Physics at the Lawrence Livermore National Laboratory, filling the vacancy created in April when ***John Nuckolls*** was appointed Director.

Correction: ***Gerald P. Dinneen*** has been elected Foreign Secretary of the National Academy of Engineering, and not, as reported in SGR of May 1, the Academy of Sciences.

In Print: Many New Works on Science-Policy Subjects

The following publications are obtainable as indicated—not from SGR.

National Aero-Space Plane: A Technology Development and Demonstration Project to Build the X-30 (78 pp.), a descriptive report by the General Accounting Office on one of the biggest, least-publicized national high-tech ventures, the $3.3-billion X-30 NASP (National Aero-Space Plane) program, a DOD-NASA project scheduled to start flight testing in 1994 of a hypersonic craft that can take off and land horizontally, fly at 25 times the speed of sound, and go into low earth orbit. Purely experimental, the X-30 is expected to spawn civil and military applications. GAO, the investigative arm of Congress, was asked by House and Senate committees to describe the vast effort, and in particular to assess NASA's junior role (20 percent of direct costs), about which distress is evident on Capitol Hill. NASA assured GAO that regardless of budget disparities, it's a co-equal in running the venture. Actually, the big spender, says GAO, is industry, which claims $353 million in NASP funding in 1986-87, compared with $233 million in federal funds.

Free. Order from: GAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

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The Medical Technology Assessment Directory (700 pp.), published by the Congressionally mandated Council on Health Care Technology, part of the Institute of Medicine, the health-policy arm of the National Academy of Sciences, this first-of-a-kind volume is the product of concern that reliable data are lacking on the utility of many costly health-care technologies. The ***Directory*** describes 68 medical-technology assessment programs in the US and abroad and contains a bibliography of 3200 assessment reports, a thesaurus, a directory to on-line services, and much more.

$250.00 per copy in North America and Mexico; $260.00 elsewhere. Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3313. In UK, Europe, and Africa, order from: John Wiley, 1 Oldlands Way, Southern Cross Trading Estate, Bognor Regis, West Sussex, PO 22, 9SA, England. In Japan: Maruzen Co., PO Box 5050, Tokyo International, 10031, Japan.

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Publications List of the Commission on Security and Cooperation in Europe, the so-called Helsinki Commission, established in 1976 to monitor human rights and promote east-west economic and cultural cooperation. Listed are some 150 publications, some out of print, on a broad range of subjects, including emigration, psychiatric incarceration of political dissidents, effects of *glasnost,* and the quality of Soviet-bloc economic data.

Free of charge, as are the publications. Order from: Commission on Security and Cooperation in Europe, House of Representatives, House Annex 2, Room 337, Washington, DC 20515; tel. 202/225-1901.

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Two new reports from the Congressional Office of Technology Assessment:

Technology and the American Economy: Choices for the Future (501 pp., $20.00, GPO Stock No. 052-003-01096-8), a massive study, five years in the works at OTA, purports to offer (according to an OTA announcement) "a new set of tools . . . to understand the new kinds of changes underway in the American economy. The key to this understanding," says OTA, "lies in examining the complex new networks that now deliver amenities such as health, food, education, and recreation." The report, arising from requests from eight Congressional committees, was produced by a group headed by OTA Project Director Henry C. Kelly, with an 18-member advisory panel chaired by David Saxon, MIT Chairman.

New Developments in Biotechnology: Field-Testing Engineered Organisms—Genetic and Ecological Issues (150 pp., $7.50, GPO Stock No. 052-003-01104-2), third in

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